Snake River - Hells Canyon Total Maximum Daily Load (TMDL)

Section 1.0 General Information

Snake River near Nyssa, Oregon circa 1939, Photo by Dr. Lyle Stanford

1.0 General Information

1.0.1 Total Maximum Daily Loads (TMDLs)

The SR-HC TMDL is one of many currently planned or in progress in the states of Oregon and Idaho. The TMDL process is described in §303(d) of the CWA (40 CFR 130.7), the rules implementing §303(d), and Oregon and Idaho Code (OAR Chapter 340, ORS Chapter 468 and Idaho §39-3611, respectively). The following sections offer answers to some of the questions commonly asked about the TMDL process. The information has been collected from a number of state and federal sources. References are cited with specific information in the following sections.

1.0.1.1 WHAT IS A TMDL?

A Total Maximum Daily Load (TMDL) is the amount of an identified pollutant that a specific stream, lake, river or other waterbody can 'accommodate' without violating state water quality standards.

TMDLs are watershed-based plans for restoration of designated beneficial uses in water quality limited waterbodies. These plans must identify the causes of designated beneficial use impairment and estimate reductions in pollutant loads necessary to meet water quality standards and restore impaired designated beneficial uses within a specified time.

Briefly, the TMDL process involves evaluating the available data from 303(d) listed waterbodies to determine point and nonpoint source pollution loads and using the data to set maximum allowable loads from each of these sources. Loads are the quantity of pollution contributed to a stream by a single source (i.e., a wastewater treatment plant) or by a group of sources (i.e., all developments or agricultural fields along a stream).

In this framework, a TMDL can be best described as a watershed or basin-wide budget for pollutant loading to a watercourse. A TMDL, in actuality, is a planning document. The "allowable budget" is first determined by scientific study of a stream to determine the amount of pollutants that can be assimilated without causing the stream to exceed the water quality standards set to protect the stream's designated beneficial uses (e.g., fishing, domestic water supply, etc.). This amount of pollutant loading is known as the *loading capacity*. It is established taking into account seasonal variations, natural and background loading, and a margin of safety. Once the loading capacity is determined, sources of the pollutants are considered. Both *point* and *nonpoint sources* must be included.

Point Sources.
Point sources of pollution, such as wastewater treatment plants, typically involve pipes that convey discharges directly into streams. A point source is simply described as a discrete discharge of pollutants as through a pipe or similar conveyance. A technical definition exists in federal regulation at 40 CFR 122.2.

Nonpoint Sources.
Nonpoint sources, such as farms, lawns, or construction sites contribute pollution diffusely through run-off. Examples are sheet flow from pastures and runoff from forest logging. Nonpoint sources may include (but are not limited to), run-off (urban, agricultural, forestry, etc.), leaking underground storage tanks, unconfined aquifers, septic systems, farms, lawns, construction sites, stream channel alteration, and damage to a riparian area.

Once all the sources are accounted for, the pollutants are then allocated or budgeted among the sources in a manner which will describe the maximum amount of each pollutant (the total maximum load) that can be discharged into a waterbody without causing water quality standards to be exceeded. The load allocations distributed among the sources indicate the maximum amount of a pollutant that can be discharged, or the reduction in pollutant loading required of both point and nonpoint sources. Ultimately the responsibility for improving water quality lies on the shoulders of everyone who lives works or recreates in a watershed that drains into an impaired waterbody.

Load Allocations.
Load allocations are simply the amounts of pollutants that can be discharged from each source or land use category and still ensure that the total pollutant load does not exceed the loading capacity. The TMDL does not specify how the dischargers must attain their particular load allocation. The TMDL will not set best management practices for a discharger or otherwise tell the discharger how to meet their goal; it merely sets their goal.

Nonpoint sources are grouped into a *load allocation* (LA) and point sources are grouped into a *wasteload allocation* (WLA). By federal regulation, the total load capacity "budget" must also include a *margin of safety* (MOS). The MOS accounts for uncertainty in the loading calculation. The MOS may not be the same for different waterbodies due to differences in the availability and strength of data used in the calculations. All together,

Loading capacity = **TMDL = WLAs + LAs + Margin of Safety**

The (point source) WLA is implemented through an existing regulatory program under the federal Clean Water Act (CWA) called the National Pollutant Discharge Elimination System (NPDES) permit program (CWA Section 402). These permits set effluent quality limitations and require implementation of best available technologies that may include specific best management practices already established by the US EPA through regulation. Provided that a viable trading framework is in place, pollutant trading is allowed between, or within, the load allocation and the wasteload allocation categories. The MOS cannot be traded.

In most cases, pollution load data already exists for most permitted point sources through the NPDES permitting process. Similar data is seldom available for nonpoint sources. Therefore, the TMDL process must develop load calculations for nonpoint sources of pollution and for natural sources of pollution. In many circumstances, nonpoint source contributions will be broken down into additional categories such as agriculture, development, forestry, or mining.

Because it is difficult to identify specific nonpoint sources of pollution, it is unlikely that data will be collected on individual nonpoint sources (or landowners) along a waterbody. Instead, most TMDLs focus on estimating the cumulative or combined contribution of all nonpoint sources along a waterbody.

1.0.1.2 WHY SHOULD TMDLS BE WRITTEN?

TMDLs are focused primarily on developing accurate estimates of the contribution of nonpoint sources to total pollution loads in streams. In Oregon and Idaho, as in many other states, the process of identifying streams for TMDL development, developing the proper methods to calculate loads from all pollution sources, and implementing programs to reduce loads in order to meet water-quality goals is just beginning. Although it is expected that this entire process could take 10 to 15 years to complete for all waterbodies requiring a TMDL, some will be completed much more quickly and others may take much longer, depending on the cause of impairment and whether or not the waterbody attains water-quality standards.

Over the past 25 years, pollution control under the CWA has focused on point sources of pollution through the NPDES permitting process. While water quality has improved in many instances, the goals of the CWA have not been met in a number of streams. Data from the US EPA suggest that nonpoint sources are now the largest source of pollution in streams and lakes (U.S. EPA, 1998).

TMDLs are expected to help identify and more fully understand specific links between sources and aggregate pollution loads in streams. The US EPA expects that the data collected as part of this process will help target local, state, and federal efforts on improving water quality enough to meet regulatory standards.

1.0.1.3 WHO IS RESPONSIBLE FOR WRITING TMDLS?

The federal CWA provides that the States have the first right to establish TMDLs. In Oregon and Idaho, the bulk of the TMDL work is done by each state's Department of Environmental Quality and submitted to the US EPA. However, if the States do not set TMDLs to US EPA's satisfaction, then US EPA is required to do so (CWA Section 303(d)).

Both federal and state statutes require the opportunity for public participation in the TMDL process. This participation may include any permittee (point sources), affected landowners (nonpoint sources), regulatory or management agencies, local governments, public interest groups, and concerned citizens. Watershed associations, or similar local organizations, are encouraged to foster communication, planning, and consensus among those concerned.

1.0.1.4 ARE THERE SPECIFIC ELEMENTS THAT A TMDL SHOULD INCLUDE?

According to the IDEQ document Guidance for the Preparation of Total Maximum Daily Loads (1999a), TMDLs generally consist of three major sections:

1) subbasin assessment,
2) loading analysis, and
3) implementation plan(s).

Subbasin Assessment.
Subbasin assessments are problem assessments conducted at the geographic scale of 4th field hydrologic units (cataloging units of the USGS), also referred to as subbasins. A subbasin assessment describes the affected area, the water quality concerns and status of designated beneficial uses of individual water bodies, nature and location of pollution sources, and a summary of past and ongoing pollution control activities. The SR-HC TMDL has chosen the approach of subbasin assessments as a way to package adjacent waters and gain economy of scale in preparation of documents.

Loading Analysis.
A loading analysis provides an estimate of a waterbody's pollutant load capacity, a margin of safety, and allocations of load to pollutant sources defined as the TMDL in EPA regulations (40 CFR 130.2). Allocations are required for each permitted point source and categories of nonpoint sources whose sum will meet the load capacity with load to spare as a margin of safety. Minor nonpoint sources may receive a lumped allocation.

Generally, a loading analysis is required for each pollutant of concern. But it is recognized that some listed pollutants are really water quality problems that are the result of other pollutants. For example, habitat affected by sediment or dissolved oxygen affected by nutrients causing nuisance aquatic growths. In these cases one listed stressor may be addressed by the loading analysis of another.

While it is intended that loading analyses be a quantitative assessment of pollutant loads, federal regulations allow that '*loads may be expressed as mass per unit time, toxicity, or other appropriate measures'* (40 CFR 130.2(I), emphasis added). In many cases, less data will be available than may be considered optimal for loading analysis. This cannot delay TMDL development. Federal regulations also acknowledge that *'load allocations are best estimates of the loading, which may vary from reasonably accurate estimates to gross allotments'* (40 CFR 130.2(g) emphasis added). Load allocations are for nonpoint sources.

A complete loading analysis lays out a general pollution control strategy and an expected time frame in which water quality standards will be met. For narrative criteria, e.g. sediment and nutrients, the measure of attainment of water quality standards is full support of designated beneficial uses. Long recovery periods (greater than five years) are expected for TMDLs dealing with nonpoint sediment or temperature sources. Interim water quality targets are recommended in these instances. Along with the load reductions, these targets set the sideboards in which specific actions are scheduled in the subsequent implementation plan.

Implementation Plan.
The implementation plan is guided by the TMDL and provides details of actions needed to achieve load allocations, a schedule of those actions, and follow up monitoring to document progress or provide other desired data. Implementation plans specify local actions that will lead to the goal of full support of designated beneficial uses. Important elements of these plans are:

- Implementation actions based on the load allocations identified in the TMDL
- An estimated time by which water quality standards are expected to be met,

including interim goals or milestones as deemed appropriate
- A schedule specifying, what, where, and when actions to reduce loads are to take place
- Identification of who will be responsible for undertaking each planned action
- A plan specifying how accomplishments of actions will be tracked
- A monitoring plan to refine the TMDL and/or document attainment of water quality standards

There may be more than one implementation plan to cover different water quality limited waterbodies within a subbasin, as in the case of the SR-HC TMDL. This TMDL has been prepared as a bi-state process between Idaho and Oregon. To fulfil the requirements of the State of Oregon TMDL process, an implementation plan must be submitted to the US EPA with the SR-HC TMDL. IDEQ guidance states that a TMDL implementation plan should be developed within eighteen months of the approval of the TMDL it is intended to support and supplement. Because of this difference in procedure, a general implementation plan is being submitted with the SR-HC TMDL and other, more detailed plans will be prepared and submitted according to the appropriate IDEQ or ODEQ schedule and procedure. Together, these documents will represent the general water quality management plan (implementation plan) for the SR-HC TMDL.

1.0.1.5 SNAKE RIVER - HELLS CANYON TMDL GENERAL PROCESS INFORMATION

The water quality of the SR-HC TMDL reach has been identified as impaired as specified under §303(d) of the CWA. As required by §303(d) of the federal CWA, the states of Oregon and Idaho must identify state waters not achieving water quality standards in spite of application of technology-based controls in NPDES permits and others for point sources (40 CFR 130.7). Such waterbodies are known as water quality limited segments (WQLSs). Once a waterbody is identified as a WQLS, the states of Oregon and Idaho are then required under the 40 CFR 130.7 and Oregon and Idaho Code (Oregon's Administrative Rules (OAR) Chapter 340, and Oregon's Revised Statutes (ORS) Chapter 468 and Idaho §39-3601 *et seq.* respectively*)* to develop a TMDL for each of the pollutants listed as impairing the stream. If the states of Oregon and Idaho default on their obligation to develop management plans, or TMDLs, to achieve water quality standards, then the US EPA is required to develop TMDLs.

The SR-HC TMDL is a plan formulated to restore good water quality conditions in the SR-HC TMDL reach through reduction of pollutant concentrations to levels that satisfy water quality standards. The plan will focus on pollutant reduction in the watershed and will be implemented in phases. In a phased TMDL much is yet unknown and the initial loading analysis may be inexact with a large margin of safety to account for uncertainty. The initial phase focuses on what is known. Interim load reductions move toward the eventual goal (by targeting more obvious source problems in the implementation plan). Essential to this approach is inclusion, in the final implementation plans, of a plan to gather the data needed to refine load estimates and their allocation. The phased implementation approach is utilized because of the complexity of the system; lack of data for some listed pollutants; uncertainty associated with the positive benefits from projects already operating within the SR-HC TMDL reach and in upstream and tributary watersheds; uncertainty associated with actual pollutant loading from various sources (natural, point and nonpoint sources); and in recognition that achieving water quality standards

will most likely require a significant amount of time, during which the understanding of pollutant loads, their effect and control will expand and improve.

Calculating the exact pollutant load for nonpoint source pollutants is difficult and often dependent on weather conditions. Therefore, a TMDL with phased implementation is necessary that identifies interim milestones for load allocations, with further monitoring to gauge the success of management actions in achieving load reduction goals and the effect of actual load reductions on the water quality in the SR-HC TMDL reach.

The SR-HC TMDL complies with state and federal requirements. Substantial funding and personnel time have been committed to this process by federal agencies (including US EPA, US Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), US Bureau of Reclamation (USBR), US Forest Service (USFS), US Geological Survey (USGS), US Department of Agriculture (USDA), tribal entities (Nez Perce and Shoshone-Paiute), the states of Oregon and Idaho (including ODEQ, Oregon Department of Fish and Wildlife (ODFW), Oregon Water Resources Department (OWRD), Oregon Department of Agricultural (ODA), IDEQ, Idaho Department of Fish and Game (IDFG), Idaho Department of Health and Welfare (IDHW), Idaho Department of Agriculture (IDA), and numerous other entities (including local industries, municipalities, soil and water conservation districts (SWCDs), watershed councils, irrigation districts and companies and private citizens) to collect and evaluate data, and to develop, review and implement this TMDL. Local citizens and industries throughout the watershed have been instrumental in developing this TMDL. A key component of this TMDL is the implementation of pollutant management plans adopted at the local level.

1.0.1.6 THE PHASED APPROACH

The SR-HC TMDL is a phased or iterative TMDL. Under this approach (defined in US EPA's Guidance for Water Quality-Based Decisions: The TMDL Process (US EPA, 1991c)), the TMDL has established load and waste load allocations calculated with margins of safety to meet water quality standards. The allocations are based on estimates that use available data and information, but monitoring for collection of new data is required. The phased approach provides for further pollution reduction without waiting for new data collection and analysis. The margin of safety developed for the TMDL under the phased approach reflects the adequacy of data and the degree of uncertainty about the relationship between load allocations and receiving water quality.

The TMDL, under the phased approach, includes (1) WLAs that confirm existing limits or would lead to new limits for point sources and (2) LAs that confirm existing controls or include implementing new controls for nonpoint sources. This TMDL requires additional data to be collected to determine if the load reductions required by the TMDL lead to attainment of water quality standards. Data collection may also be required to more accurately determine assimilative capacities and pollution allocations.

In addition to the allocations for point and nonpoint sources, the phased approach of this TMDL will establish the schedule or timetable for the installation and evaluation of point and nonpoint source control measures, data collection, the assessment for water quality standards attainment, and, if needed, additional predictive modeling. The scheduling with this approach will be developed to coordinate all the various activities (permitting, monitoring, modeling, etc.) and

involve all appropriate local authorities and State and Federal agencies. The schedule for the installation and implementation of control measures and their subsequent evaluations will include descriptions of the types of controls, the expected pollutant reductions, and the time frame within which water quality standards will be met and controls re-evaluated. This information will be developed as part of the site-specific implementation plans to be completed within 18 months following the approval of this TMDL by US EPA.

As no monitoring program currently exists for the majority of this TMDL reach, and as additional assessments are needed for both pollutants and implementation progress, it will be necessary for the States to design and implement a monitoring plan. The objectives of the monitoring program should include assessment of water quality standards attainment, verification of pollution source allocations, calibration or modification of selected models, calculation of dilutions and pollutant mass balances, and evaluation of point and nonpoint source control effectiveness. In their monitoring programs, the States should include a description of data collection methodologies and quality assurance/quality control procedures, a review of current discharge monitoring reports, and be integrated with volunteer and cooperative monitoring programs where possible. If properly designed and implemented, the monitoring program will result in a sufficient database for assessment of water quality standard attainment and additional predictive modeling if necessary. This plan will be developed as part of the site-specific implementation plans to be completed within 18 months following the approval of this TMDL by US EPA.

1.0.1.7 STATE WATER QUALITY STANDARDS

The water quality standards specific to the SR-HC TMDL process were set by the respective states through a public process that includes public participation and hearings. Federal law requires the states to review the standards at least once every three years. Standards adopted by the states ultimately must be approved by the US EPA (Clean Water Act Section 303). If the US EPA does not approve the standards adopted by the states then they may either refer them back to the states or promulgate their own standards for the states.

1.0.2 Clean Water Act Overview and Statutory History

The Federal Water Pollution Control Act is the primary federal legislation that protects surface waters such as lakes and rivers. This legislation, originally enacted in 1948, was further expanded and enhanced in 1972; in the 1977 amendments it became known as the “Clean Water Act”. Since 1972, the CWA has undergone many changes, amendments and additions. The Act currently in place today contains much that the original 1972 version did not. It has been and continues to be subject to change as new information and a more complete understanding of the natural system and our impacts (both positive and negative) are identified. A short history of the CWA is presented in the following paragraphs. A more thorough discussion of the CWA can be found in *The Clean Water Act: An Owners Manual* (Elder et. al., 1999).

The main purpose of the CWA is the improvement and protection of water quality through restoration and maintenance of the physical, chemical and biological integrity of the nation's waterways. The CWA provides a mechanism whereby the status of the nation’s waters can be

evaluated, beneficial uses for specific water bodies designated and water quality criteria established to protect those designated beneficial uses.

Initial attempts to control pollution of the nation's waterways occurred in the late 19th century (Refuse Act of 1899). The first comprehensive water quality legislation was the Water Pollution Control Act (WPCA) of 1948, which was adopted after four decades of debate over the role of the federal government in addressing water quality issues. The WPCA resulted in a statutory framework that included shared State and Federal program development responsibilities, limited Federal enforcement authority, and limited financial assistance. These concepts were continued in the Federal Water Pollution Control Act (FWPCA) of 1956 and in the Water Quality Act of 1965.

The 1972 amendments to the FWPCA (commonly know as the CWA), established a broader federal role through the establishment of a water quality standards program, a national discharge permitting system for municipal and industrial sources, technology-based effluent standards, and Federal grants for municipal wastewater treatment facilities. Section 303 of the 1972 FWPCA established the statutory basis for the current water quality standards program, TMDLs, and standards implementation for point and nonpoint sources.

1.0.2.1 REGULATORY HISTORY

The Clean Water Act (1972 FWPCA) saw major revisions in 1977 and 1987, with the 1987 revisions being most significant. US EPA first published regulations for water quality standards in 1975 (40 CFR 130.17, 40 FR 55334, November 28, 1975) as part of the water quality management regulations mandated in section 303(e) of the CWA. The 1978 regulation required "appropriate" water quality criteria to support designated uses and did not address toxic pollutants.

The original regulation was revised on November 8, 1983 (40 CFR 131) and is a more comprehensive regulation that addresses legal and programmatic concerns and public, political, and agency concerns that toxic pollutants were not being effectively controlled.

The 1987 revisions to the CWA included phasing out of the grants program for municipal wastewater treatment facilities and adoption of a new toxic pollutant control approach (e.g. required adoption of numeric toxic criteria and NPDES permit limitations for toxic pollutants).

1.0.2.2 ADDITIONAL CLEAN WATER ACT INFORMATION

Under the recently revised federal regulations (US EPA, 2000b), section 303(d) of the CWA each state is required to submit a list to the US EPA identifying waters throughout the state that are not achieving state water quality standards in spite of the application of technology-based controls in NPDES permits (40 CFR 130.7(b)(1)). These recently revised (but as yet unapproved) rules require that the first list must be submitted in 2002, and that an updated list be submitted every five (5) years after that. Current rules require that an updated 303(d) list be submitted every two (2) years. The waters identified on the 303(d) list are known as water quality limited waters. They are those waters that do not meet water quality standards and therefore still require a TMDL in spite of the application of technology-based controls in NPDES permits. IDEQ and ODEQ are directed by state statute (see Idaho Code 39-3601 *et seq*., and

OAR Chapter 340, and ORS Chapter 468) to develop TMDLs for these waters. Once developed, TMDLs are submitted to the US EPA for approval.

This document is being written under the guidance of current federal TMDL rules. The newly revised federal rules (US EPA, 2000b) may become effective after the submission date of this TMDL document. However these new rules allow states to choose between the application of the former TMDL rules and the new TMDL rules for some TMDLs (Section 130.37, section II-W on pages 43635-43636; US EPA, 2000b). The states of Oregon and Idaho have selected to write the SR-HC TMDL under the former TMDL rules, therefore, the structure and content of this document reflect a combination of those state (Oregon and Idaho) and federal requirements in place at the beginning of this TMDL effort (November 1999) (Appendix A).

1.0.3 Federal and State Water Quality Laws

The federal Water Pollution Control Act of 1972, as amended (33 U.S.C. §§ 1251 through 1371), commonly known as the CWA, comprehensively addresses water quality and pollution controls through the establishment of state and federal regulatory roles and responsibilities. The states' roles under the CWA include the development and enforcement of water quality standards, the control of nonpoint source activities to achieve attainment of water quality goals, the identification of WQLSs, and the development of TMDLs. The state agencies principally responsible for the development, implementation, and enforcement of Oregon and Idaho water quality standards and fulfilling Oregon's and Idaho's obligations under the CWA are ODEQ and IDEQ. (See generally Oregon Code OAR Chapter 340, ORS Chapter 468 and Idaho Code §§ 39-105 and 39-3601 *et seq.).*

The federal government's roles under the CWA include regulating the discharge of pollutants from point sources by establishing technology-based controls in point source (NPDES) permits. This responsibility has been delegated to the states in some instances (including Oregon). The federal government, through the US EPA, also oversees state obligations under the CWA, by approving state water quality standards, state WQLS lists, and state and interstate TMDLs.

1.0.3.1 STATE OF IDAHO TMDL BACKGROUND AND WATER QUALITY LEGISLATION

In 1993, two Idaho environmental organizations filed a citizen suit authorized under the CWA in federal district court in Seattle against the US EPA. This suit alleged that: (1) the US EPA violated §303(d) of the CWA in approving Idaho's 1992 WQLS list because the list did not identify all impaired state waters; and, (2) the US EPA should develop TMDLs for all Idaho WQLSs since Idaho had not developed TMDLs in a timely fashion in the past.

While the lawsuit was pending, Idaho submitted its 1994 WQLS list to the US EPA for approval. The list included 62 waterbodies. However, in April 1994 the court found that the submission of Idaho's prior WQLS list was "underinclusive" and ordered the US EPA to publish a new list. The US EPA published a final WQLS list for Idaho in October 1994, which included 962 waterbodies. Most of the 962 waterbodies have not been scientifically monitored to determine compliance with water quality standards. In May 1995, the court ordered the US EPA to establish a reasonable and complete schedule with the State of Idaho to develop TMDLs on all WQLSs because the court was concerned about the pace of TMDL development in Idaho (1997).

The issues raised in the §303(d) lawsuit highlighted the need to: (1) develop a comprehensive statewide process to monitor water quality on all state waters; and, (2) develop TMDLs on those waterbodies that were not achieving water quality standards.

In 1995, the Idaho legislature passed Idaho Code §39-3601 *et seq.* regarding the administration of water quality laws in the State of Idaho. Idaho Code §39-3601 *et seq.* requires IDEQ to monitor all waterbodies throughout the state to determine compliance with water quality standards. On those waterbodies not complying with water quality standards, IDEQ is then required to develop TMDLs on a priority basis to ensure attainment of water quality standards. A critical component of Idaho's water quality legislation is the establishment of citizen advisory groups that advise IDEQ on the development of TMDLs and other pollution control strategies on WQLSs.

As required by order of the court, in May 1996, the State of Idaho and the US EPA submitted a schedule to the court for short-term and long-term development of TMDLs. The schedule anticipated that all 962 WQLSs would be monitored by 1997, and thereafter TMDLs would be developed on those waterbodies which monitoring indicates do not comply with state water quality standards. On those waterbodies where monitoring has previously determined non-attainment of water quality standards, such as the SR-HC TMDL reach, the state has committed to the development of TMDLs on a short-term basis. Thus, on the SR-HC TMDL reach, the state has committed to the development of a TMDL to be submitted to the US EPA on completion.

1.0.3.2 STATE OF OREGON TMDL BACKGROUND AND WATER QUALITY LEGISLATION

The State of Oregon has been involved in a legal process regarding TMDLs similar to that described above for the State of Idaho. Following a lawsuit filed by Northwest Environmental Defense Center (NEDC) against the US EPA based on US EPA's failure to ensure ODEQ's development of TMDLs, a Consent Order was entered into in 1987 between US EPA and NEDC. The Consent Order committed ODEQ to complete TMDLs on several specific waterbodies, and to complete a specific percent of TMDLs per year given the number of waterbodies identified as impaired at that time. In 1994, an additional lawsuit was filed by Northwest Environmental Advocates (NWEA) regarding the adequacy of the 303(d) list, followed in 1996 by another lawsuit against US EPA for not forcing ODEQ to complete TMDLs on a faster schedule. The Oregon Plan TMDL schedule was agreed to by US EPA in a Memorandum of Agreement signed by ODEQ and US EPA on February 1, 2000.

On February 7, 2000, the Sierra Club and Jack Churchill re-initiated court action against US EPA seeking to enforce the 1987 Consent Decree. The plaintiffs asked the court to establish an extremely aggressive six-month TMDL completion schedule for Oregon. On July 26, 2000 District Judge Michael R. Hogan ruled on the two important TMDL cases before him. In that ruling, the Court denied the motion of several parties (Sierra Club *et al.*) to intervene in the Churchill Case, which sought to enforce the original 1987 Consent Decree by compelling US EPA to finish all the TMDLs in six months. The Court also denied plaintiff Churchill's motion to enforce the 1987 Consent Decree and granted US EPA's motion to modify the 1987 Consent Decree. The Court approved the settlement of the lawsuit against US EPA brought by environmental groups and granted US EPA's motion to enter (approve) the proposed Consent

Decree (NWEA, NEDC, US EPA proposal). It also ordered the 1987 Consent Decree to be modified to conform to the new Consent Decree.

The new Consent Decree basically endorses Oregon's plan to complete TMDLs on a 10 year schedule (the Oregon Plan schedule), with the last TMDLs to be completed by Oregon by the end of 2007.

1.0.4 Enforcement Authorities

The IDEQ's regulatory and enforcement authorities are set forth in the Idaho Environmental Health and Protection Act (1972), as amended (Idaho Code §39-101 *et seq.*), Idaho Code §39-3601 *et seq.*, and §350 of the *Idaho Water Quality Standards and Wastewater Treatment Requirements*. The ODEQ's regulatory and enforcement authorities are set forth in the Oregon administrative rules, Chapter 340, and ORS Chapter 468. The DEQs will rely on existing authorities to achieve the goals and objectives of the SR-HC TMDL. The goals and objectives of this TMDL will be used by the DEQs as guidelines to document compliance with state water quality standards with consideration for the physical reality of the existing system and compliance with other applicable laws. Attainment of water quality standards including restoration of designated beneficial uses for the SR-HC TMDL reach will require a significant, long-term, coordinated effort from all pollutant sources throughout the watershed.

A letter of agreement signed by the DEQs of both Oregon and Idaho states that the SR-HC TMDL will be a joint effort by both states to be submitted to US EPA on completion. In this letter both states also agree to coordinate activities to assure that all parties are meeting their goals, reconcile differences in water quality objectives and standards, develop a scientifically based plan for pollutant reduction, provide the opportunity for public input to the TMDL process, and provide for meeting all state and federal requirements pertaining to water quality.

For point source discharges of pollutants subject to NPDES permits, the DEQs will ensure achievement of water quality goals established in the SR-HC TMDL through water quality certifications provided in Section 401 of the CWA. However, point sources represent only a minor source of listed pollutants. Water quality standards attainment and full support of designated beneficial uses within the SR-HC TMDL reach will only be possible with joint reductions from both point and nonpoint sources.

For nonpoint sources, a feedback loop will be used to achieve water quality goals. If monitoring indicates a violation of standards despite use of approved best management practices (BMPs) or knowledgeable and reasonable efforts, then BMPs for the nonpoint source activity must be modified by the appropriate agency to ensure protection of designated beneficial uses (Idaho Water Quality Standards and Wastewater Treatment Requirements, § 350.02.b.ii). This process is known as the feedback loop in which BMPs and other efforts are periodically monitored and modified if necessary to ensure protection of designated beneficial uses.

Currently, for agricultural activities in the State of Idaho there are no enforceable BMPs. Therefore, agricultural activities must use knowledgeable and reasonable efforts to achieve water quality standards. The DEQs encourage the use of recommended BMPs developed by the

Natural Resource Conservation Service (NRCS), which when selected for a specific site can become an approved BMP. The DEQs, in cooperation with other agencies, will participate in efforts to evaluate the effectiveness of site specific BMPs and other restoration projects in reducing pollutant loading. If the BMPs prove ineffective they will be modified to ensure effectiveness of existing and future efforts. Modifications to forestry BMPs required by the Forest Practices Act (FPA) will be subject to state rule-making requirements.

In the event that BMPs for nonpoint sources are not implemented adequately using a voluntary approach, the DEQs will use existing regulatory authorities to seek water quality improvements. Adequate implementation requires that enough reduction measures be installed and that they be properly maintained. In general, the DEQs will incorporate pollution prevention into enforcement actions, since pollution prevention is the ultimate goal for protecting human health and the environment. In addition, the DEQs will work closely with the SR-HC public advisory team, resource agencies, and affected parties to review existing authorities and determine if additional regulatory requirements are necessary to achieve the goals of the SR-HC TMDL.

1.0.5 Public Involvement

Throughout the SR-HC TMDL process, local experience and participation have been and will continue to be an important resource in the identification of water-quality issues and reduction strategies appropriate on a local scale. Because of the impact of the TMDL process on the local community and the dependence of any implementation plan on local participation; public involvement is viewed as critical for the entire TMDL process. During the initial stages of the SR-HC TMDL process, a structured public involvement program was established that included both local stakeholders and technical/agency personnel. This program was established so members of the local communities could provide direction and leadership in developing and implementing this plan. The public committee created is known as the SR-HC Public Advisory Team (PAT). The SR-HC PAT provides an opportunity for a group of concerned citizens, representing a number of stakeholder groups, to see the SR-HC TMDL process through from start to finish. The SR-HC PAT, though advisory in nature, has the potential to shape the final outcome of the SR-HC TMDL. Interested citizens not involved directly through the SR-HC PAT can get involved in the SR-HC TMDL process through attendance at public comment and informational meetings, and are invited to attend SR-HC PAT meetings.

1.0.5.1 FORMATION OF THE PUBLIC ADVISORY TEAM

At the beginning of the SR-HC TMDL process, the DEQs from Oregon and Idaho collectively identified general categories of significant stakeholder interests within the SR-HC TMDL reach and watershed areas.

Within the State of Idaho, these interest categories were approved by the South West Basin Advisory Group (BAG) as outlined in Idaho Code 39-3614, 3615. Within the State of Oregon, these interest categories were approved by ODEQ as outlined by Oregon protocol at the time. Nominations for potential seat holders in each of these interest categories were solicited from the general public through letters to local governments, organizations, stakeholder groups, individuals, and watershed councils in both Oregon and Idaho. Generally, one representative from each state was selected from the nominations received to represent each area of interest. In

the case of industry and hydropower, only a single nomination was received by both states. Therefore, a single SR-HC PAT representative was nominated for each of these seats. In the case of tribal interests, it was recognized that tribal lands and concerns do not necessarily correspond to state boundaries. Nominations were therefore solicited from all tribal entities potentially affected by this TMDL process. Two nominations were received from Tribal entities; both nominations were selected as Tribal Interest seat holders. An alphabetical listing of the final stakeholder seats within the SR-HC PAT follows:

- Hydropower Interests
- Idaho Agricultural Interests
- Idaho Environmental Interests
- Idaho Local Government Interests
- Idaho Municipal Interests
- Idaho Public at Large
- Idaho Sporting or Recreational Interests
- Idaho Timber/Forestry Interests
- Industrial Interests
- Oregon Agricultural Interests
- Oregon Environmental Interests
- Oregon Local Government Interests
- Oregon Municipal Interests
- Oregon Public at Large
- Oregon Sporting or Recreational Interests
- Oregon Timber/Forestry Interests
- Other Idaho Interests
- Other Oregon Interests
- Tribal Interests – Nez Perce
- Tribal Interests – Shoshone/Paiute

Within the State of Idaho, seat holders for each of the Idaho interest categories were approved by the BAG and the Boise Regional Office of IDEQ as required by Idaho Code 39-3615. The SR-HC PAT functions as the watershed advisory group (WAG) for the State of Idaho for this TMDL process as required by Idaho Code 39-360, 39-3616. The seat holders for each of the Oregon interest categories were approved by the Eastern Regional Office of ODEQ.

A complete list of all SR-HC PAT seat holders and the interest area they represent will be included in Appendix B of the final TMDL document.

1.0.5.2 ROLE AND RESPONSIBILITIES OF THE PUBLIC ADVISORY TEAM

The legal and technical aspects of the SR-HC TMDL are largely the responsibility of the DEQs and experts from other state and federal agencies. It is the responsibility of the DEQs to assess and quantify water quality problems, specify the amount of pollutant reduction necessary in order to meet water quality standards, and to develop pollutant allocations. It is also the responsibility of the DEQs to write the SR-HC TMDL and submit it to the US EPA. It is then

the responsibility of the US EPA to approve or disapprove the SR-HC TMDL within 30 days of submission.

The SR-HC PAT functions as an advisory body to the DEQs in developing the SR-HC TMDL and implementation matters within the DEQ responsibilities outlined above. SR-HC PAT members help to identify contributing pollutant sources, advise the DEQs in arriving at equitable pollutant reduction allocations, and recommend specific actions needed to effectively control sources of pollution. As mentioned earlier, the SR-HC TMDL process will affect the local communities and landowners. In addition, the success of the SR-HC TMDL process is dependent on local participation. Public involvement, education and awareness are critical to the TMDL process. SR-HC PAT seat holders are members of local communities that can provide direction and experience in local problems and locally based solutions to the DEQs. Their leadership and experience is invaluable to this process in developing and implementing the TMDL.

Additionally, SR-HC PAT seat holders represent a critical mechanism in disseminating information to their respective interest groups, and relaying concerns and advice from these interest groups to the DEQs. In this manner, SR-HC PAT seat holders work directly with their respective interest groups to provide advice to the DEQs in developing the SR-HC TMDL. After the approval of the SR-HC TMDL, seat holders may potentially also help in identifying funding needs and sources of support for specific projects that may be implemented. They may also assist in the review of implementation project efficiencies and the identification of pollutant reduction trends.

The PAT has been meeting on a monthly basis throughout the process to complete the SR-HC TMDL document. At the initial meeting of the SR-HC PAT, general structure and strategy were discussed. An overall goal of the process discussed was the improvement of water quality in the SR-HC TMDL reach while maintaining the economic and cultural viability of local landowners, citizens, municipalities, tribal entities, and industries. It was determined that due to the large geographical area of the SR-HC TMDL reach and the associated watershed, and the fact that the interests represented by separate SR-HC PAT seat holders may be divergent in their consideration of, and position on, some issues; the SR-HC PAT would not operate under a consensus-based process. The potential for agreement on some issues and disagreement on other issues was acknowledged by SR-HC PAT members at this time.

The seat holders and the interagency team members (ODEQ and IDEQ) decided that there should be an opportunity for the submission (formally or informally) to the public record of opinions different from that of the SR-HC PAT in general, or to the approach, philosophy or methodology used by the DEQs in the formulation of the SR-HC TMDL. In accordance with this decision, an informal record of differences in opinion on issues discussed is available to the public in the minutes from SR-HC PAT meetings, and in the listing of informal comments by SR-HC PAT members on initial drafts of the SR-HC Subbasin Assessment and other sections of the SR-HC TMDL compiled by the DEQs. This information is available on request from the Cascade Satellite Office of IDEQ, PO Box 247, Cascade, ID 83611; and from the Pendleton Office of ODEQ, 700 SE Emigrant, Suite 330, Pendleton, OR 97801.

1.0.5.3 OTHER TECHNICAL, ADVISORY, AND REVIEW OPPORTUNITIES

A less formally structured committee of technical experts from a variety of agency backgrounds is associated with the SR-HC PAT. These technical experts attend SR-HC PAT meetings as their time permits and can be called on to answer specific technical concerns or questions raised. Within the agency and state funding structures currently established, these technical experts may also be responsible for reviewing draft and final versions of the SR-HC TMDL document, implementation plan, and implementation mechanisms to ensure they are consistent with water quality standards, designated beneficial use requirements, and pollutant reduction goals. They may also review the methods and mechanisms used within the SR-HC TMDL process, and proposed implementation projects to ensure that they are scientifically sound and follow scientifically accepted procedures. This group of technical experts includes scientific and engineering representatives from local, state and federal agencies, industry and municipal staff as follows:

- Idaho Soil Conservation Commission
- Idaho Department of Lands
- Idaho Department of Environmental Quality
- Idaho Department of Agriculture
- Idaho Department Fish and Game
- Idaho Department of Water Resources
- Oregon Division of State Lands
- Oregon Department of Environmental Quality
- Oregon Department of Agriculture
- Oregon Department of Fish and Wildlife
- Oregon Department of Water Resources
- National Marine Fisheries Service
- USDI Fish and Wildlife Service
- USDA Natural Resources Conservation Service
- US Environmental Protection Agency
- USDI Bureau of Reclamation
- USDA Forest Service
- US Geological Survey
- US Department of Agriculture
- US Bureau of Land Management
- Local Soil and Water Conservation Districts

1.0.6 Goals and Objectives of the Snake River – Hells Canyon TMDL

The overall goal of the SR-HC TMDL is to improve water quality in the SR-HC TMDL reach by reducing pollution loadings from all appropriate sources to meet water quality standards and restore full support of designated beneficial uses within the SR-HC TMDL reach.

Key objectives of the overall goal of the SR-HC TMDL are:

- To assess the condition of the SR-HC TMDL reach and determine the status of designated beneficial use support.

- To identify the cause of designated beneficial use impairment.
- To establish pollutant targets that are appropriate for the SR-HC TMDL reach and that will result in attainment of water quality standards and support of designated beneficial uses within the reach.
- To identify pollutant-specific critical time periods for the SR-HC TMDL reach.
- To establish load allocation mechanisms that will allow attainment of the water quality targets through (to the extent possible) fair and equitable distribution of the identified pollutant loads, and result in productive implementation without causing undue hardship on any single pollutant source.
- To outline necessary implementation steps to attain the SR-HC TMDL pollutant targets. (This is accomplished in a general fashion in the water quality management plan (Oregon) and implementation plan (Idaho) submitted with this document, and in detail in the implementation plans to be completed within 18 months of US EPA TMDL approval).
- To identify data gaps within the SR-HC TMDL effort.
- To ensure that additional data and information can and will be incorporated into the SR-HC TMDL effort as time goes on.
- To ensure that the improved understanding of the SR-HC system (as provided by additional data) can be incorporated into the TMDL effort through the phased implementation and iterative process of the SR-HC TMDL in such a way that targets and load allocations can be revised (if appropriate) to better meet the needs of the designated beneficial uses of the system.

Implementing these objectives for the SR-HC reach will require a significant effort over the course of many years during which TMDL objectives, assumptions, analysis, progress, and particularly costs and benefits must be periodically reevaluated.

1.0.6.1 MODIFYING THE TMDL WHEN WATER QUALITY STANDARDS OR DESIGNATED BENEFICIAL USES CHANGE

Water quality standards consist of designated uses and water quality criteria. One or both of these components of water quality standards may change or be removed from a waterbody, or site specific criteria may be developed to reflect increased understanding of the factors that affect water quality. Changes in water quality standards necessarily affect TMDL objectives, targets and load allocations. An example is the State of Idaho's recent bacteria criteria change from fecal coliform to *E coli* bacteria. During the development of this TMDL, questions from stakeholders regarding the appropriateness of certain designated uses and criteria have been raised and are currently under investigation. The outcome of these investigations will be reviewed by IDEQ and ODEQ and the appropriateness to the SR-HC TMDL process determined. Due to the anticipated long duration of this TMDL, it is foreseeable that water quality standards and/or designated beneficial uses may change in the near or more distant future.

It is therefore appropriate to clarify the existing process for reviewing and modifying (if necessary) the TMDL if water quality standards change. When there has been a change in a designated use or a water quality criteria applicable to a water body for which this TMDL has been developed, the IDEQ and ODEQ shall, in consultation with the applicable BAG or WAG (PAT), evaluate whether the TMDL or implementation plans should be modified to reflect the

change in the use or criteria. Changes in the TMDL shall be accomplished pursuant to the requirements of state and federal law, including the requirements for public participation, and be submitted to the US EPA for approval. IDEQ and ODEQ anticipate that needed revisions to the TMDL can be accomplished and be submitted to the US EPA within 120 days from the date that consultation with the BAG or the WAG (PAT) is initiated.

1.0.6.2 LONG TERM WATER QUALITY-BASED GOALS

The SR-HC TMDL establishes targets and corresponding load allocations that ODEQ and IDEQ believe are necessary to meet water quality standards and support designated beneficial uses. ODEQ and IDEQ recognize that implementing BMPs to achieve these targets and load allocations may take several years to several decades. These long-term targets and load allocations are based on the analysis of water quality conditions affecting designated uses as presented in Section 2.0 (Subbasin Assessment) and Section 3.0 (Loading Analysis) of this TMDL. Periodic review of long-term targets and load reductions will enable the DEQs and stakeholders to reevaluate and adjust these targets and load allocations in accordance with information, analysis, and experience developed after this TMDL is adopted.

1.0.7 Implementation Considerations

It is recognized that the SR-HC TMDL addresses an extremely complex system that includes a combination of diverse natural, point, and nonpoint pollutant sources. The system has been highly modified from its original condition through the placement and operation of the Hells Canyon Complex hydropower projects; numerous surface water diversions and drains; upstream impoundments operated for hydropower production, irrigation storage, flood control and recreational use; and a variety of other anthropogenic activities. In addition to the altered flows, periodic regional drought conditions, pollutant inputs from upstream sources and the underlying aquifer contribute to the complexity of the system. Data is available for some pollutants to determine whether the water quality standards are met, however, for other pollutants there is only limited data that does not conclusively show that the waters are impaired by such pollutants. For narrative water quality criteria numeric targets were developed as part of this TMDL. Basic water quality modeling was completed to assess maximum loadings that would attain the numeric targets and, therefore, presumably the water quality criteria.

As identified in the IDEQ TMDL Guidance (1999a), "A phased approach is typically needed when nonpoint sources are a large part of the pollutant load, information is limited, or narrative criteria are being interpreted." This TMDL has, therefore, adopted a phased approach that will include additional monitoring and data collection, and periodic review/reassessment of numeric targets and their relationship to the respective water quality criteria. These activities will improve the reliability of the TMDL and provide better assurances that water quality standards will be attained. However, while data gathering, monitoring and modeling occur, the implementation of TMDL control measures will also occur. This TMDL has therefore adopted a phased approach to implementation that will identify interim, measurable milestones to determine the effectiveness of management measures or other action controls being implemented, and a process for reviewing and revising management approaches to assure effective management measures are implemented. Due to the complexity of the SR-HC TMDL reach, the agencies responsible for the preparation and approval of the SR-HC TMDL (US EPA,

ODEQ and IDEQ) recognize that long time frames may be required before water all quality standards are met.

It is expected that this phased approach to implementation, where implementation activities are scheduled over a period of time, will result in some sources achieving load allocations prior to other sources. However, the early implementation of some management measures will assure that progress is made toward achieving water quality standards in accordance with the schedule established by the TMDL.

The implementation of the SR-HC TMDL will consist of and support practices and policies that will further sustainable and responsible land use and development. Regional cooperation in developing long-term environmental, economic, and community sustainability plans will be of critical importance to this effort. The site specific implementation plans that follow the completion of the SR-HC TMDL will focus on strategies that promote sustainable options. The implementation of soil, water, and energy conservation programs, which also provide water quality benefits, will be emphasized. Waste minimization, pollution prevention, and waste recycling programs are central to the success of the SR-HC TMDL.

To fulfill the requirements of the State of Oregon TMDL process, an implementation plan must be submitted to the US EPA with the SR-HC TMDL. IDEQ guidance states that a TMDL implementation plan should be developed within eighteen months of the approval of the TMDL it is intended to support and supplement. Because of this difference in procedure, a general plan is being submitted with the SR-HC TMDL and other, more specific implementation plans will be prepared and submitted according to the appropriate IDEQ or ODEQ procedure and schedule requirements. Moreover, through the phased TMDL/adaptive management approach, the implementation plans may be revised as information, data, experience, or other aspects of the TMDL become available to determine the effectiveness of implementation strategies.

The purpose of this water quality management plan is to act as a general outline for implementation of the SR-HC TMDL. However, substantial differences in state procedure and policy for implementation of TMDLs exist between Oregon and Idaho. Therefore, the Plan submitted contains two separate, state-specific plans:

- The State of Oregon General Water Quality Management Plan (Section 6.1) and
- The State of Idaho General Implementation Plan (Section 6.2).

Together, these documents represent the general water quality management plan (implementation plan) for the SR-HC TMDL.

In addition to the implementation plan submitted for the mainstem SR-HC TMDL reach, tributary plans will also be prepared as part of tributary TMDL processes. These plans will be prepared according to the appropriate state-specific schedules under which they are identified. Implementation plans for the tributaries may also reflect the phased approach. The load allocations for tributaries identified by the SR-HC TMDL process, and the management measures identified for sources on the tributaries specific to the load allocations from the SR-HC TMDL will be reviewed and modified (if necessary) as additional data and information becomes available on the relationship between tributary water quality and attainment of water quality

standards in other SR-HC TMDL reaches and the relative effectiveness of management measures on other SR-HC TMDL reaches.

It is also expected that information will continue to be collected to fill existing data gaps and allow a more accurate determination of the status of designated beneficial uses within the SR-HC TMDL reach and the influence of pollutants delivered to and processed by the system. In recently formulated guidance on TMDLs, US EPA recognized that additional information regarding the actual performance of management measures may lead to questions concerning the appropriateness of certain water quality standards. If the evidence shows that management measures are not effective in attaining the water quality standards, the States and authorized Tribes may choose to initiate use attainability analyses to determine the appropriate uses for SR-HC TMDL reaches and, possibly, revise those uses on the basis of the information gathered during the implementation phase of the TMDL (US EPA, 2000b).

Tributary inflows to the SR-HC TMDL reach have been treated as discrete, nonpoint sources for the purposes of loading analysis and allocation within this TMDL. Existing or future tributary TMDL processes will distribute load allocations in the form of load allocations and/or waste load allocations within their watersheds. Gross load allocations have been assigned to each inflowing tributary for this TMDL. It should be kept in mind that while inflowing loads to the SR-HC TMDL reach represent nonpoint sources to the mainstem Snake River, actual tributary loading is composed of both point and nonpoint discharges within the respective tributaries. In some tributary watersheds, point source discharges from municipalities or industries combine with nonpoint discharges from agriculture and rural stormwater in the river channel as flow moves downstream. All of these will be represented as nonpoint source loading to the Snake River for the purposes of the SR-HC TMDL.

1.0.7.1 MONITORING PLAN

A monitoring plan will be developed and implemented within 18 months after EPA approval of this TMDL to measure SR-HC water quality conditions, track progress in attaining TMDL objectives, and fill data gaps as part of the site-specific implementation plans to support the SR-HC TMDL. The plan will be developed in consultation with the PAT and other appropriate stakeholders. The DEQs anticipate participation by EPA, the USGS, and other federal and state agencies. The monitoring plan is expected to include instream monitoring of the SR-HC reach, tributary inflows, point sources, and nonpoint source discharges to which loads are allocated by this TMDL.

1.0.7.2 PHASED APPROACH FOR IMPLEMENTATION

The fundamental elements of the phased approach are: (1) a process for modifying TMDL objectives, targets and load allocations when water quality standards change; (2) long-term, scientifically justified, water quality-based goals; (3) interim attainable water quality goals based on implementation of feasible control strategies and an equitable distribution of load reduction; (4) pollutant trading which enables stakeholders to commit limited financial resources to implement the most cost-effective control strategies within watershed(s) of the SR-HC reach; (5) monitoring to periodically review and determine progress in attaining TMDL objectives; and (6) periodic review and modification of these goals, cost-benefit analysis, and progress in achieving

them through a clearly articulated and scheduled phased approach. This approach is discussed in more detail in following sections of this document and in the implementation plan (Section 6.2).

1.0.7.3 PERIODIC REVIEW

The TMDL and Water Quality Management/Implementation Plan objectives will undergo periodic review as part of the phased approach. A general, interim review of data collected and associated TMDL objectives will be undertaken on a five-year interval. A more detailed review of data collected, water quality trends observed, and associated TMDL objectives will be undertaken on a 20-year interval. An associated review of costs and benefits of implementing feasible control strategies should also be undertaken to aid in the identification of future implementation objectives. It is recognized that these reviews are dependent on availability of funding, however, every effort will be made to observe these review objectives.

1.0.8 Adaptive Management

The goal of the Clean Water Act and associated administrative rules for Oregon and Idaho is that water quality standards shall be met or that all feasible steps will be taken towards achieving the highest quality water attainable. This is a long-term goal in many watersheds, particularly where nonpoint sources are the main concern. To achieve this goal, implementation must commence as soon as possible.

TMDLs are numerical loadings that are set to limit pollutant levels such that in-stream water quality standards are met and designated beneficial uses are supported. ODEQ and IDEQ recognize that TMDLs are values calculated from mathematical models and other analytical techniques designed to simulate and/or predict very complex physical, chemical and biological processes. Models and some other analytical techniques are simplifications of these complex processes and, while they are useful in interpreting data and in predicting trends in water quality, they are unlikely to produce an exact prediction of how streams and other waterbodies will respond to the application of various management measures. It is for this reason that the TMDL has been established with a margin of safety.

For the purposes of the SR-HC TMDL, a general Water Quality Management Plan (Implementation Plan) will be written and submitted to EPA as part of the TMDL document. Following this submission, in accordance with approved state schedules and protocols, specific implementation plans will be prepared for pollutant sources in Oregon and Idaho. If specific implementation plans are available at the completion of the TMDL, they will be referenced in the general Water Quality Management Plan. Appropriate agencies and/or entities as designated by the states will assist in the development and oversight of the specific plans. These specific implementation plans will be designed to reduce pollutant loads to meet the TMDLs established for listed pollutants.

For point sources, it is the initial expectation that sources will meet their specific waste load allocations in five years or sooner if feasible. During this time frame, each source will prepare a facilities plan (the point source version of an implementation plan) that will investigate alternatives for meeting allocations. If the facilities plan documents that achieving waste load allocations within the five-year time frame is not feasible, the source may request an extension.

The request may be considered by the Director, but, in the case of Oregon, may also be referred to the Oregon Environmental Quality Commission.

For nonpoint sources, ODEQ and IDEQ also expect that implementation plans be implemented as soon as practicable. ODEQ and IDEQ recognize, however, that it may take some period of time, from several years to several decades, to fully develop and implement effective management practices. ODEQ and IDEQ also recognize that it may take additional time after implementation has been accomplished before the management practices identified in the general Water Quality Management Plan or specific implementation plans become fully effective in reducing and controlling pollution. In addition, ODEQ and IDEQ recognize that technology for controlling nonpoint source pollution is, in many cases, in the development stages and will likely take one or more iterations to develop effective techniques. The adaptive management process for implementation provides the flexibility necessary to identify and evaluate management practices and, accordingly, modify implementation plans to reflect revised or new management practices. It is possible that after application of all reasonable best management practices, some TMDLs or their associated targets and surrogates cannot be achieved as originally established. Nevertheless, it is the expectation of both ODEQ and IDEQ that nonpoint sources make a good faith effort to achieving their respective load allocations in the shortest practicable time.

Both ODEQ and IDEQ recognize that expedited implementation of TMDLs will be socially and economically challenging. Further, there is a desire to minimize economic impacts as much as possible consistent with protecting water quality and designated beneficial uses.

ODEQ and IDEQ further recognize that, despite the best and most sincere efforts, natural events beyond the control of humans may interfere with or delay attainment of the TMDL and/or its associated targets and surrogates. Such events could be, but are not limited to floods, fire, insect infestations, and drought.

For some pollutants in the SR-HC TMDL, pollutant surrogates have been defined as alternative targets for meeting the TMDLs. The purpose of the surrogates is not to bar or eliminate human access or activity in the basin or its riparian areas. It is the expectation, however, that the general Water Quality Management Plan and the associated specific implementation plans will address how human activities will be managed to achieve the water quality targets and surrogates. It is also recognized that full attainment of pollutant surrogates (system potential vegetation, for example) at all locations may not be feasible due to physical, legal or other regulatory constraints. To the extent possible, the specific implementation plans should identify potential constraints, but should also provide the ability to mitigate those constraints should the opportunity arise. For instance, at this time, the existing location of a road or highway may preclude attainment of system potential vegetation due to safety considerations. In the future, however, should the road be expanded or upgraded, consideration should be given to designs that comply with TMDL load allocations and pollutant surrogates such as system potential vegetation.

If a nonpoint source that is covered by the TMDLs complies with its finalized implementation plan or applicable forest practice rules, it will be considered in compliance with the TMDL.

ODEQ and IDEQ intend to regularly review progress of this general Water Quality Management Plan and the associated specific implementation plans to achieve TMDLs. If and when ODEQ and IDEQ determine the general Water Quality Management Plan and the associated specific implementation plans have been fully implemented, that all feasible management practices have reached maximum expected effectiveness, and a TMDL or its interim targets have not been achieved, the DEQs shall reopen the TMDL and adjust it or its interim targets and the associated water quality standard(s) as necessary.

The implementation of TMDLs and the associated plans is enforceable under the applicable provisions of the water quality standards for point and nonpoint sources by ODEQ, IDEQ, and other state agencies and local governments in both Oregon and Idaho. However, it is envisioned that sufficient initiative exists on the part of local stakeholders to achieve water quality goals with minimal enforcement. Should the need for additional effort emerge, it is expected that the responsible agency will work with land managers to overcome impediments to progress through education, technical support or enforcement. Also, ODEQ and IDEQ will assist stakeholders in seeking grant funds and support stakeholder's requests for grants from federal, state and private agencies (as appropriate), to fund data collection and evaluation efforts, and implementation testing or evaluation of point source and nonpoint source controls. Enforcement may be necessary in instances of insufficient action towards progress. This could occur first through direct intervention from state or local land management agencies, and secondarily through ODEQ or IDEQ. The latter may be based on departmental orders to implement management goals leading to water quality standards.

If a source is not given a load allocation, it does not necessarily mean that the source is prohibited from discharging any wastes. A source may be permitted to discharge by ODEQ or IDEQ if the holder can adequately demonstrate that the discharge will not have a significant impact on water quality over that achieved by a zero allocation. For instance, a permit applicant may be able to demonstrate that a proposed thermal discharge would not have a measurable detrimental impact on projected stream temperatures when site temperature is achieved. Alternatively, in the case where a TMDL is set based upon attainment of a specific pollutant concentration, a source may be permitted to discharge at that concentration and still be considered as meeting a zero allocation.

Subject to available resources, ODEQ and IDEQ intend to review the progress of the TMDLs, general Water Quality Management Plan and the associated specific implementation plans, on a five-year basis. In conducting this review, ODEQ and IDEQ will evaluate progress towards achieving the TMDLs (and water quality standards) and the success of implementing the general Water Quality Management Plan and associated specific implementation plans.

ODEQ and IDEQ expect that designated agencies in each state will also monitor and document their progress in implementing the provisions of the specific implementation plans for those pollutant sources for which they are responsible. This information will be provided to ODEQ and IDEQ respectively for use in reviewing the TMDL. ODEQ and IDEQ expect that designated agencies will identify benchmarks for the attainment of TMDL targets and surrogates as part of the specific implementation plans being developed. As implementation of the general Water Quality Management Plan and the associated specific implementation plans proceeds, these

established benchmarks will be used to measure progress toward the goals outlined in the SR-HC TMDL.

Where implementation of the specific implementation plans or effectiveness of management techniques are found to be inadequate, ODEQ and IDEQ expect designated agencies to revise the components of their implementation plan to address these deficiencies.

ODEQ and IDEQ will review aspects of the TMDL including water quality targets, loading analysis, and management measures. It is expected that the results of this review and any proposed changes will be discussed to the extent possible with both the SR-HC PAT and appropriate stakeholder groups.

If ODEQ and IDEQ, in consultation with the designated agencies, conclude that all feasible steps have been taken to meet the TMDL and its associated targets and surrogates, and that the TMDL, or the associated targets and surrogates are not practicable, the TMDL may be reopened and revised as appropriate. ODEQ and IDEQ would also consider reopening the TMDL should new information become available indicating that the TMDL or its associated targets and/or surrogates should be modified.

1.0.9 Pollutant Trading

As stated by Dr. Clinton Shock of the Malheur Experiment Station: "The future lies in the direction of the best attainable function and use in the environment in view of the physical constraints and multiple use needs. Every cost and benefit interacts with others. Site specific capabilities need to be determined, so that we are effectively working towards economically and environmentally realistic long term improvements (2001)." This is a primary goal of the TMDL process. While the interpretation and application of water quality standards from either Oregon or Idaho cannot address cost effectiveness (cost of attainment can be addressed in the establishment of standards, but not the application of existing standards), the implementation mechanisms utilized can recognize this issue.

One valuable tool to meet water quality goals in an efficient manner is pollutant trading. Pollutant trading is a market-based, business-like way to help solve water quality problems by focusing on cost-effective, watershed-level solutions to problems caused by discharges of pollution. Pollutant trading is most practical when pollution sources face substantially different pollution reduction costs. Typically, a party facing relatively high pollution reduction costs compensates another party to achieve an equivalent, though less costly, pollutant reduction. This compensation, in many cases, may actually provide the other party with enough funds to meet or exceed their own load allocation under a TMDL in addition to the trade. The result is overall lowered pollution discharges with the most cost-effective pollution reductions attainable.

An important aspect of pollutant trading is that it is voluntary. Parties trade only if both are better off as a result of the trade. Pollutant trading does not create any new regulatory obligations because trading systems are designed to fit within existing regulatory frameworks.

Trading allows pollutant sources to decide how to best reduce discharges. A successful pollutant trading program will create flexibility that allows common sense selection of pollutant reduction methods based on financial merit, while ensuring water quality goals are met.

Currently, a policy framework is available for pollutant trading. A demonstration project was initiated in November 1997 in the Lower Boise River watershed. The Idaho DEQ, in cooperation with the US EPA and interested stakeholders representing municipalities, industry, agriculture, and environmental interests have developed a proposed trading system for the Lower Boise watershed. The first phase of this process focused on developing an administrative framework for the dynamic trading of pollutant loading to the river system, and identified the following important conclusions:

- Trading could offer municipalities flexible, cost-effective options for managing increased flows and loads associated with growth, and provide nonpoint sources with the financial resources to help them achieve reductions needed to meet TMDL goals.
- Costs for nutrient reductions range widely among sources, providing the financial basis (or conditions) to produce economic benefits. Incremental costs for phosphorus reductions at wastewater treatment plants range from $5 to more than $200/lb, whereas agricultural management practices hold the potential to reduce phosphorus loads for $5 to $50/lb.
- Stakeholders favor an approach in which regulatory agencies set the critical parameters for trading (e.g., tradable pollutants, and pollutant reductions required to meet water quality standards), while the day-to-day trade administration is handled by a nonprofit association of stakeholders, rather than by a government agency.

The second phase focused on development of two model trades and detailed development of the TMDL, permit, trade tracking, and nonpoint source credit mechanisms necessary to support dynamic trading that results in environmentally equivalent outcomes. Key features of the proposed trading system include:

- Trades that follow permit requirements and the adoption of trading rules that do not require up-front agency review or approval;
- Wasteload allocations and pollutant limits that are adjusted in the NPDES process by the creation and registration of valid credits in a trade tracking database;
- A BMP list that specifies how to create and quantify either measured or calculated nonpoint source credits, including monitoring and maintenance requirements; and
- Ratios calculated from watershed data and applied to the trade transaction that ensure environmentally equivalent reductions.

The Lower Boise River trading framework should be modified for the SR-HC TMDL process. This could be accomplished within the first five-year phase of the implementation of the SR-HC TMDL. Pollutant trades that could occur under a SR-HC TMDL trading program, either in the SR-HC watershed or on any of the tributaries to the SR-HC watershed, include:

- Point Source-to-Point Source trades (e.g. between municipalities or other NPDES permitted sources);
- Point Source-to-Nonpoint Source trades (e.g. between a municipality or other permitted source and a nonpoint source such as a watershed-based application of BMPs to agricultural lands);

- Nonpoint Source-to-Nonpoint Source trades (e.g. between a watershed-based agricultural BMP implementation project and the Idaho Power Company, purchasing pollutant trading credits under their load allocation for Brownlee Reservoir).

Modification and adoption of a framework specific to the SR-HC TMDL process would provide the administrative process under which dynamic pollutant trading could occur in the watershed and its tributaries, ensuring that the most cost-effective pollution controls are used in the TMDL implementation process. The SR-HC TMDL PAT would be the most logical committee to oversee and lead this effort, preferably within the first five-year phase of TMDL implementation. The US EPA, IDEQ and ODEQ will actively support the ultimate adoption of a trading framework to allow both point and nonpoint sources to participate in pollutant trading within the SR-HC TMDL watershed.

Until a point source-nonpoint source trading framework is in place, IDEQ and ODEQ recommend that point sources with allocations expand their facilities planning efforts to consider means and costs of reducing their loads further than necessary to meet allocations. Sources could then market their additional load reductions to others under the existing point source to point source trading framework and, if their load reductions were cheaper to achieve, sell them. IDEQ and ODEQ are willing to adjust allocations after the TMDL is established provided the parties involved have enforceable contracts, permits, or other instruments to ensure that effluent trades can and will be implemented.

IDEQ and ODEQ will further support the construction (or modification) of a trading framework to allow nonpoint sources to participate in pollutant trading within the SR-HC TMDL watershed.

IDEQ is currently (2002 to 2003) funding an effort to identify key issues and trading potential in the SR-HC TMDL reach. A similar effort of more general nature is being undertaken by ODEQ with the support of US EPA.

Among the significant issues which need to be addressed are the potential water quality impacts from trading between tributary inflows to the Snake and between stretches of the main stem of the Snake; mechanisms which will ensure the 0.07 mg/L instream target will be attained while trades are employed; protection of water quality on the local scale; and the environmental and economic feasibility of trading within each tributary watershed.

If trading between tributaries and the mainstem is contemplated, a mechanism will need to be developed which will ensure that the total loadings discharged into each tributary will not exceed their allocation set by the SR-HC TMDL at the inflow point. In addition, if trading is to occur prior to a TMDL distributing the tributary allocation among the various sources in that watershed, US EPA recommends the involved parties refer to the US EPA “Proposed Water Quality Trading Policy Statement” for additional guidance. This draft policy requires a net reduction of the pollutant such that a direct water quality benefit may be obtained.

If nonpoint source to nonpoint source pollution trades are contemplated, mechanisms will need to be developed to hold the buyer or seller accountable for the validity of the credit’s underlying reduction and to ensure that credit purchases can be tracked. These mechanisms would have to

provide the same type of assurances required of point sources in the Lower Boise River trading framework.